REMARKS

Preliminary Matters:

Applicants kindly request that the Examiner indicate acceptance of the drawings in the next Office Action. Additionally, Applicants note that the cited Weiss reference (U.S. Patent No. 4,501,201) has not been listed on the Notices of References Cited Form PTO-892. The Examiner is requested to list this document on a PTO-892 Form in the next Office Action.

Objection to the Specification:

The grounds of rejection indicate that the phrase "segments 11, 12, or 13 . . ." should read --segments 11, 12, and 13, . . . respectively." Applicants note that this interpretation in the grounds of rejection is one exemplary embodiment of the invention, however, it does not preclude, for example, users 18 and 20 being connected with the coupling devices. As such, Applicants submit that the specification should be given its broadest interpretation.

Claims 1-18 and 36-63 are all the claims pending in the application. The Examiner is kindly notified that the Office Action Summary includes claim 19 as pending.

Claims 4-6, 11, 17-18, 37-39, 44-46, 51, and 57-63 stand rejected under 35 U.S.C. §102(b) as being anticipated by Shimokawa et al. ("Shimokawa"). The present invention relates to a network and a coupling device for connecting two segments in a network, in which the coupling device can readily obtain information on the extent of the network. Additionally, the invention relates to a network and a coupling device for connecting two segments in such a network, through which the influence of faults on the capacity of the network is reduced.

Shimokawa relates to a data transmission system in which fault inspections of a network can be conducted without deteriorating the throughput of the network. With respect to claim 4, the grounds of rejection state that Shimokawa discloses features wherein each node includes a control circuit (which the Examiner equates to a detecting/blocking device) for detecting faults (citing col. 2, lines 37-47) and prohibiting transmission or reception (citing col. 8, line 54-68).

As noted from above, the grounds of rejection summarize the features of claim 4, however, elements of claim 4 (not discussed by the general summary provided in the Office Action) are neither disclosed nor suggested by Shimokawa.

Claim 4 recites, *inter alia*:

"wherein the first coupling device includes a detecting device and a blocking device for detecting corruption of a message through faults on the second segment and, after detection of a fault, to block the forwarding to the first segment of messages received in the second segment, and the second coupling device includes a detecting device and a blocking device to block the forwarding to the third segment of messages received in the second segment upon detection of a block of the forwarding of messages by the first coupling device."

As discussed in the present specification, blocking of the forwarding of messages from a faulty segment has the advantage that dynamic faults, e.g., short spikes, as well as continuous disturbances in a segment of the network do not reduce the transmission capacity of other segments of the network (see page 5, first paragraph of the present specification). In the present invention, as recited, the second coupling device blocks the forwarding to the third segment of

messages received in the second segment *upon detection of a block of the forwarding of messages by the first coupling device.*

The Shimokawa network, however, handles faults (an anomaly as used in the Shimokawa specification) in an entirely different manner. In the Shimokawa network, each node detects anomalies and takes decisions autonomously, and executes independently measures such as the prohibition of transmission or reception (see col. 4, lines 44-46). Thus, in the Shimokawa network, there is *explicitly* no interrelationship between the nodes and their functions of transmission or reception of messages due to the autonomous and independent nature of the nodes. As such, there is no disclosure that the second coupling device (node) in the Shimokawa network would look to an action taken by the first coupling device (node) in its decision to block messages. Accordingly, Applicants submit that claim 4 is allowable.

Claim 5 is allowable based on its dependence on claim 4. In addition, claim 5 recites, *inter alia*:

"wherein the blocking device of the first coupling device blocks the forwarding of messages to the second segment upon detection of a fault in the second segment for at least a minimum segmentation time, and the second coupling device includes a monitoring device for monitoring transmission activities on the second segment, which checks compliance with a maximum idle time on the second segment, and if the maximum idle time is exceeded, blocks the forwarding to the third segment of messages received on the second segment."

The grounds of rejection state that Shimokawa discloses blocking occurring for at least a period of time (minimum segmentation time) that it takes to send and receive a frame reset

(citing col. 5, lines 39-44). Applicants note that this section of Shimokawa discusses sending a reset frame throughout the network to inform all of the nodes that a faulty node has recovered. This is an entirely different procedure than that claimed. Claim 5 recites blocking the sending of messages based on idle time. Informing the nodes that a faulty node has recovered bears no relation on blocking messages based on idle time. Thus, should the claim not be allowed, the Examiner is kindly requested to further discuss where this feature is disclosed by Shimokawa in a non-final Office Action.

Claim 6 is also allowable based on its dependence on claim 4. In addition, claim 6 recites a feature "wherein forwarding of messages by the first coupling device is blocked only after determination of a predefined number of errors." The grounds of rejection state that Shimokawa discloses prohibiting the forwarding of data upon the occurrence of a fault (which the Examiner equates to a single predetermined number of errors) (citing col. 4, lines 41-46). Applicants again note that the citation to Shimokawa appears incorrect as this section of Shimokawa refers to the reset frame procedure to announce that a node has recovered. Nonetheless, to advance prosecution, Applicants respectfully submit that Shimokawa does not disclose the aforementioned feature. Rather than using a predefined number of errors to determine when to block forwarding of messages as recited in claim 6, in Shimokawa, when an anomaly (error) is detected, a check frame is sent to a neighboring node on the side in which the anomaly was detected (see col. 4, lines 47-54). Based on this check frame, decisions are made with regards to transmission and reception (blocking) of messages. Therefore, Applicants respectfully submit that claim 6 is allowable.

Claim 11 is allowable based on its dependence on claim 4. In addition, claim 11 recites a feature whereby "the second coupling device supplements a message to be forwarded from the third segment to the second segment irrespective of possibly present control information valid on the second segment . . . so that the first coupling device connected to the second segment can evaluate the control information to assess a transmission quality on the second segment."

The grounds of rejection state that this feature is shown in Shimokawa as a check frame (control information) to either neighboring node when an anomaly is detected (citing col. 4, lines 47-54). Applicants respectfully traverse this rejection. First, the claim recites supplementing a message ... *irrespective of control information*. As such, the control information discussed in the grounds of rejection actually teaches away from the features of this claim. Second, Shimokawa discloses that the check frame is unrelated to the transmission/reception data (see col. 4, lines 64 and 65). Third, Applicants fail to find any discussion in Shimokawa or the grounds of rejection relating to the *supplementation of a message* as claimed. Accordingly, Applicants respectfully submit that claim 11 is allowable. Claim 51 (rejected for the same reason as claim 11) is allowable for similar reasons.

Claim 17 is allowable based on its dependence on claim 4. In addition, claim 17 recites a feature "wherein the blocking device of the second coupling device unblocks the forwarding if a check of transmission quality on the second segment by special messages transmitted via the second segment from the first coupling device to the second coupling device and vice versa shows good transmission quality." The grounds of rejection argue that this feature is disclosed

by the reset frame of Shimokawa, citing col. 5, lines 39-44. Applicants respectfully traverse this rejection.

As mentioned above, the reset message of Shimokawa is a reset frame sent throughout the network to inform all of the nodes that a faulty node has recovered. This announcement of network status is quite different than claimed. In particular, the special message as claimed actually checks the transmission quality while the Shimokawa reset message does not check the transmission quality of the network, but only announces that a node has resumed operation. As such, Applicants respectfully submit that claim 17 is allowable.

Claim 18 is allowable based on its dependence on claims 4/17. In addition, claim 18 recites a feature whereby special messages are sent between coupling devices after expiration of a minimum segmentation time. There are at least four (first, second, third, and fourth) recited special messages sent between the first and second coupling devices. The grounds of rejection generally allege that this feature is disclosed by the Shimokawa check frames (citing col. 14 (Applicants read as col. 4) lines 47-54). However, with regards to the check frames, there is no disclosure in Shimokawa that four special messages are used in the check frame method. Rather, in Shimokawa, only a check frame is sent and a check response frame is received - no subsequent third or fourth messages are disclosed as being sent between nodes. Therefore, Applicants respectfully submit that claim 18 is allowable for these features as well. Claim 58 (rejected for the same reason as claim 18) is allowable for similar reasons.

Claim 44 recites a feature of "blocking the forwarding to the third segment of messages received in the second segment upon detection of a block of the forwarding of messages to the

first segment. For similar reasons above as discussed for claim 4, Applicants note that the Shimokawa network operates in an entirely different manner than recited in claim 44. In the Shimokawa network, each node detects anomalies and takes decisions autonomously, and executes independently measures such as the prohibition of transmission or reception (see col. 4, lines 44-46). Thus, in the Shimokawa network, there is *explicitly* no interrelationship between the nodes and their functions of transmitting or reception of messages due to the autonomous and independent nature of the nodes. Therefore, the method of blocking messages recited in claim 44 cannot be anticipated by the disclosure of Shimokawa. Accordingly, Applicants submit that claim 44 is allowable.

Claim 45 is allowable based on its dependence on claim 44. Further, claim 45 also includes similar features as claim 5 (minimum segmentation time), and is allowable for the reasons discussed above. Further, Applicants note that the grounds of rejection for claim 45 state that an anomaly in Shimokawa is detected by a built-in timer that measures a slot time (alleging that this is the minimum segmentation time). However, use of a slot time (alleged as the claimed minimum segmentation time) for detecting anomalies is not the same as blocking messages for a minimum segmentation time. Thus, Applicants respectfully submit that claim 45 is allowable.

Claim 46 is allowable based on its dependence on claim 44. In addition, claim 46 also includes features similar to claim 6, and in the interest of brevity and understanding, is allowable for similar reasons as discussed above for claim 6.

Claim 57 is allowable based on its dependence on claim 44/45. In addition, claim 57 also includes features similar to claim 17, and in the interest of brevity and understanding, is allowable for similar reasons as discussed above for claim 17.

Claim 37 is allowable for its dependence on claims 4/5. In addition, claim 37 recites a feature "wherein the maximum idle time on the second segment is substantially half the measured slot time." The grounds of rejection indicate that this is disclosed at col. 4, lines 59-61 of Shimokawa and allege that this section teaches an idle time equivalent to a slot time. Again, as discussed above (see claim 45), the slot time in Shimokawa is used for detecting anomalies, while the claimed maximum idle time is used in the present invention for blocking messages. These are two, quite different purposes and bear no relation to one another. Claim 59 (rejected for the same reason as claim 37) is allowable for similar reasons. Additionally, claims 38, 39, 60, and 61 define the a minimum segmentation time which the grounds of rejection equate to the slot time of Shimokawa. These claims are allowable for similar reasons as claim 45 and as just discussed. That is, the slot time in Shimokawa is used for detecting anomalies, while the claimed minimum segmentation time is used for blocking messages.

Claim 62 is allowable at least based on is dependence on claim 4, and claim 63 is allowable at least based on its dependence on claims 4/62.

Claims 9-10 and 49-50 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Shimokawa et al. in view of U.S. Patent 4,501,021 to Weiss. These claims are allowable at least based on their dependence on claims 1 and 44, respectively. Weiss is related to a fiber optic data highway where stations of the data highway are arranged sequentially along one

transmission line, rather than radially around a master station (see col. 1, lines 7-11). Claim 9 recites a feature "wherein the detecting device detects corruption if more than a predefined number of characters are contained in a received message." Claim 10 further defines the predefined number of characters as 262. Claims 49 and 50 recite similar features.

The grounds of rejection acknowledge that the aforementioned features are not disclosed by Shimokawa. However, the grounds of rejection state that Weiss discloses a maximum frame (character) size for detecting error (citing col. 3, lines 46-64). Applicants respectfully traverse this rejection. Applicants submit that Shimokawa uses a check frame of short word length to *determine* an anomaly (see col. 4, lines 47-54). Thus, Applicants submit that one of ordinary skill in the art would not look to the teachings in Weiss for error detecting abilities, since a specific process using a check frame is defined by Shimokawa. Thus, Applicants submit that claims 9, 10, 49, and 50 are allowable.

Claims 12-16 and 52-56 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Shimokawa et al. in view of Newton's Telecom Dictionary. The grounds of rejection for claims 12, 14, 52 and 54 equate the claimed control information with the check frame of Shimokawa. Applicants note that claim 12 recites generating control information for a message, and comparing that control information with received control information. When the control information does not match, this indicates an error. However, with respect to the check frame, no comparison is made. That is, the nodes only check to see if the check frame was *received* by the other node (see col. 4, lines 50-54). This process is quite different than that claimed. Accordingly, there is no teaching that one of ordinary skill in the art would look to incorporate a

CRC frame defined by Newton's Telecom Dictionary into the Shimokawa check frame method. Thus, Applicants respectfully submit that claims 12 and 14 (as well as 52 and 54) are allowable.

Because of this difference in methods, and the lack of motivation to combine Shimokawa and Newton's Telecom Dictionary, the features of claims 13-16 and 53, 55, and 56 are also allowable.

Claims 7-8 and 47-48 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Shimokawa in view of U.S. Patent 4,648,123 to Schrock. Applicants respectfully traverse this rejection. Schrock is related to a remote level measuring system that is operable to adjust, from a master terminal, the transmission level of remote terminals in a network system (see col. 3, lines 25-32). Claim 7 (and 47) recites a feature wherein the "detecting device detects corruption if a signal level in a received message persists longer than a predefined time." First, Shimokawa teaches away from the use of a master terminal (or supervisory node) (see col. 2, lines 3-6) as used by the Schrock system. Thus, by their different network systems, the combination of Shimokawa and Schrock are tenuous. In addition, Schrock is related to preventing intermodulation distortion between return signals of a number of remote terminals (see col. 2, lines 10-15, and lines 45-47). To do this, the master terminal sets the signal levels at the remote terminals (see col. 3, line 67 - col. 4, line 3). Applicants submit that the process of adjusting signals levels being set by a master terminal to prevent intermodulation distortion among remote terminals is an entirely different process than using a signal level to detect corruption. Thus, claims 7 and 47 are allowable for this feature, as well as their respective dependencies on claims 4 and 44. With respect to claims 8 and 48, these claims specifically recite the signal level

remains on a low level for 13 consecutive bit times. The Examiner states that this is disclosed by Schrock by the waiting for a predetermined period of time and then sampling and measuring a signal level (citing col. 3, line 49- col. 4, line 3). Applicants note that Schrock discloses waiting a predetermined period of time and then sampling a signal. However, there is no disclosure or suggestion that this single sampling be conducted more than once, and more specifically for 13 consecutive bit times. Accordingly, claims 8 and 48 are allowable for this reason as well.

Claims 40-43 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Shimokawa in view of U.S. Patent 5,805,586 to Perreault et al. and Vol. 17 of Engineering and Automation by Stewen (submitted with our Information Disclosure of October 24, 2001). First, these claims are allowable based on their dependence on claim 4 for the reasons above. The Examiner uses Perreault et al. as disclosing the claimed GAP query, and Stewen as disclosing the claimed PROFIBUS DB protocol.

With respect to claims 40, 41, and 43, these claims recite a predefined slot time to check whether new users have been connected to the network. The grounds of rejection state that this predefined slot time is shown by the slot time of Shimokawa at col. 4, lines 12-26. However, there is no disclosure that the slot time of Shimokawa is used to detect new users. Rather, the slot time, as disclosed is used to detect an anomaly in transmission which would prevent the transmitted data from returning. As such, the Shimokawa slot time is not the same as the predefined slot time claimed in claims 40, 41, and 43. Neither Perreault et al. or Stewen make up for this lack of teaching in Shimokawa.

Claims 1-3 and 36 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Perreault et al. in view of Stewen. Applicants respectfully traverse this rejection.

First, claim 1 recites "at least one coupling device operable to connect the plurality of segments. The grounds of rejection states that this is disclosed by the control station 8 of Figure 1 of Perreault et al. The grounds of rejection state that the control device is connected to a plurality of tributary devices. Applicants respectfully submit that one of ordinary skill in the art would not view the control station as a coupling device as claimed, with respect to the tributary devices as alleged in the grounds of rejection. As shown in Figure 1, the control station 8 does not connect the tributary devices to one another. Accordingly, claim 1, and dependent claims 2, 3, and 36 are allowable at least based on this feature.

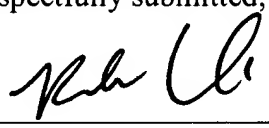
Second, Perreault et al. does not disclose use of predefined slot times. This is acknowledged by the grounds of rejection, which states that this feature would have been obvious. Rather Perreault et al. discloses use of a poll that indicates which channel a tributary station should transmit data on. If a station has not responded, there may be a timeout, at which time there would be less polling to that tributary station (see col. 3, lines 29-38). However, one of ordinary skill in the art would not equate this with predefined slot times - the two are different concepts. In conjunction with this, neither reference discloses use of the active users checking whether new users have been added to the network, as claimed. Stewen discloses monitoring a network for faults, but does not address adding new users.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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